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ABSTRACT

The superiority of the evolving computer-based approach to learning has not been supported by systematic comparisons with other methods. The effectiveness and acceptability of computer-presented and print-presented materials, containing identical concepts and methods for improving study skills and academic attitudes, were compared in a sample of 421 college freshmen. All students completed the Survey of Study Habits and Attitudes (SSHA) on the first and last day of class. A rating scale was also administered to assess student opinions of the value of the courses. Results indicated that the computer and print approaches were equally effective in improving self-reported study habits and attitudes. Both approaches achieved significant gains. Student assessment of the acceptability of the two approaches also revealed no meaningful differences--both were rated very positively. While the results support the conclusion that computer-based learning is effective and acceptable, they do not support its superiority. (JAC)

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COMPARATIVE EFFECTIVENESS OF STUDY SKILLS INSTRUCTION WITH COMPUTER-PRESENTED AND PRINT-PRESENTED MATERIALS

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RESEARCH PROBLEM

During the past five years, microcomputer hardware and software have undergone extremely rapid growth in sophistication, capability, and utilization--especially in the field of education. Numerous symposia, seminars, workshops, and articles have reported the developing technology and proclaimed the superiority of the evolving computer-based learning approach over the traditional print-based learning approach. However, these claims were not supported by findings from systematic comparisons because the needed research had not been undertaken. The purpose of this investigation was to systematically compare the effectiveness and acceptability of computer-presented and print-presented materials containing identical concepts and methods for improving college-level study skills and academic attitudes.

RESEARCH OBJECTIVES

The following research objectives were set for this study:

(1) To evaluate the effectiveness and the acceptability of instruction and guidance employing computer presentation of accepted methods and concepts for improving study skills and academic attitudes.

(2) To compare the effectiveness and the acceptability of the computer-based approach with that achieved by study skills instruction using traditional printed materials.

RESEARCH PROCEDURES

SAMPLES: Freshmen completing C&I 1201 during the 1983-84 academic year provided the research samples. Only freshmen completing the Survey of Study Habits and Attitudes at the beginning and at the end of the course were included in the study. The computer approach sample totaled 149 freshmen and the print approach sample totaled 272 freshmen completing C&I 1201 during the fall and spring semesters.

INSTRUCTIONAL MATERIALS: The computer approach utilized the materials developed for the Computer-Assisted Study Skills Improvement Program: Study Skills Surveys, Study Skills Mod-

ules, Study Skills Notebook, Study Skills Exercises, and Study Skills Test. The print approach utilized the printed materials developed for the Effective Study Course: Study Skills Surveys, Student's Guides to Effective Study, Effective Study Exercises, and Effective Study Test. The concepts and methods presented in the two instructional packages were identical except for minor changes in wording to fit the instructional medium, computer or print, being employed.

CRITERION MEASURES: The Survey of Study Habits and Attitudes was administered to all students enrolled in C&I 1201 on the first day and the last day that each section met during the semester. The total score, Study Orientation, and two subtotal scores, Study Habits and Study Attitudes, served as criterion measures for assessing the self-reported study skills and academic attitudes of participating students before and after taking the course. A locally developed rating scale was employed to assess student opinions concerning the

Table I

COMPARISON OF PRE-COURSE AND POST-COURSE SSHA SCORES FOR COMPUTER-BASED AND PRINT-BASED SECTIONS OF C&I 1201

SSHA STUDY ORIENTATION SCORE:

APPROACH	SECTIONS	COMPARISON	CHI SQUARE	DF	SIGNIFICANCE
Computer	8/8	Pre/Post	94.188	8	>.001
Print	12/12	Pre/Post	115.298	8	>.001
Computer/Print	8/12	Pre/Pre	13.885	8	>.10 <.05
Computer/Print	8/12	Post/Post	2.548	8	>.98 <.95

SSHA STUDY HABITS SCORE:

APPROACH	SECTIONS	COMPARISON	CHI SQUARE	DF	SIGNIFICANCE
Computer	8/8	Pre/Post	98.570	8	>.001
Print	12/12	Pre/Post	143.821	8	>.001
Computer/Print	8/12	Pre/Pre	10.277	8	>.30 <.20
Computer/Print	8/12	Post/Post	3.308	8	>.95 <.90

SSHA STUDY ATTITUDES SCORE:

APPROACH	SECTIONS	COMPARISON	CHI SQUARE	DF	SIGNIFICANCE
Computer	8/8	Pre/Post	45.162	8	>.001
Print	12/12	Pre/Post	53.072	8	>.001
Computer/Print	8/12	Pre/Pre	12.811	8	>.20 <.10
Computer/Print	8/12	Post/Post	5.357	8	>.80 <.70

value and helpfulness of each of the ten modules comprising both the computer-based and print-based approaches. All students enrolled in C&I 1201 completed the rating scale anonymously during the last regularly scheduled class meeting.

FINDINGS:

Hypothesis #1: There will be a significant difference in the distributions of scores on the Survey of Study Habits and Attitudes obtained "before" and "after" completing the computer approach version of C&I 1201 at Lamar University.

Results: As indicated in Table I, the distributions of pre-course and post-course Study Orientation, Study Habits, and Study Attitudes scores were significantly different for the computer-based sections. Therefore, Hypothesis #1 is accepted at the >.001 level of confidence.

Hypothesis #2: There will be a significant difference in the distributions of scores on the Survey of Study Habits and Attitudes obtained "before" and "after" completing the print approach version of C&I 1201 at Lamar University.

Results: As indicated in Table I, the distributions of pre-course and post-course Study Orientation, Study Habits, and Study Attitudes scores were significantly different for the print-based sections. Therefore, Hypothesis #2 is accepted at the >.001 level of confidence.

Hypothesis #3: There will be a significant difference in the distributions of "pre" scores on the Survey of Study Habits and Attitudes for students enrolled in the computer approach and the print approach sections of C&I 1201 at Lamar University.

Results: As indicated in Table I, the distributions of pre-course Study Orientation, Study Habits, and Study Attitudes scores for the computer-based and print-based sections were not significantly different. However, Hypothesis #3 is barely rejected as the level of significance was >.10 <.05 on Study Orientation, >.30 <.20 on Study Habits, and >.20 <.10 on Study Attitudes.

Hypothesis #4: There will be a significant difference in the distributions of "post" scores on the Survey of Study Habits and Attitudes for students enrolled in the computer approach and the print approach sections of C&I 1201 at Lamar University.

Results: As indicated in Table I, the distributions of post-course Study Orientation, Study Habits, and Study Attitudes scores for the computer-based and print-based sections

were not significantly different. Hypothesis #4 is fully rejected as the level of significance was >.98 <.95 on Study Orientation, >.95 <.90 on Study Habits, and >.80 <.70 on Study Attitudes.

Hypothesis #5: There will be a significant difference in the assessed value of the course by students enrolled in the computer-approach and the print-approach sections of C&I 1201 at Lamar University.

Results: As indicated in Table II, the distribution of ratings by students enrolled in the computer-based and print-based sections were not significantly different for nine of the ten modules comprising the instructional content for the two approaches. A significant difference at the >.01 level was found for Module #7, Making Oral Reports. However, due to developing time constraints, this module was deemphasized in most of the print-based sections, while receiving more comprehensive coverage in all of the computer-based sections. Consequently, the significant difference in the evaluated usefulness of this module is more likely due to the differential emphasis in presentation rather than to a meaningful difference in subsequent usefulness to the students. Thus Hypothesis #5 is rejected because no meaningful differences were found in student assessments of the value of modules presented by computer or by printed materials.

CONCLUSIONS

Two approaches to teaching efficient study skills and effective academic attitudes, one employing computer presentation and the other employing print presentation of identical concepts and methods, were compared as to their perceived effectiveness and acceptability by students completing the respective programs.

The computer presentation approach and the printed materials approach were found to be equally effective in improving the self-reported study habits and attitudes of freshmen completing C&I 1201 at Lamar University. Both approaches achieved very significant gains in Survey of Study Habits and Attitudes scores obtained before and after the course. Although the score distributions obtained prior to instruction were slightly different, the score distributions for the two approaches were almost identical when the course ended. Therefore, it was concluded that the two approachs may be expected to produce comparable improvement in the study skills and academic attitudes of college freshmen.

Likewise, the acceptability of the two approaches, as evaluated by student assessment of the perceived usefulness of the course content, revealed no meaningful differences in student

Table II

COMPARISON OF MODULE EVALUATIONS MADE BY STUDENTS COMPLETING COMPUTER-BASED AND PRINT-BASED SECTIONS OF C&I 1201

	Percent Evaluating Module						
APPROACH	Very Good	Good	Fair	Poor	Very Poor	CHI SQUARE	SIGNIFICANCE
Rate each of the topics covered in the course as to its value or helpfulness to you.							
Module #1: Managing Time							
Computer	52.1	33.8	14.1	0.0	0.0	2.65	>.50 <.30
Print	42.9	40.3	15.7	1.1	0.0		
Module #2: Improving Memory							
Computer	29.6	43.7	22.5	4.2	0.0	2.14	>.70 <.50
Print	21.9	52.6	22.4	2.6	0.5		
Module #3: Taking Lecture Notes							
Computer	39.4	47.9	12.7	0.0	0.0	3.87	>.30 <.20
Print	45.8	36.8	15.8	1.6	0.0		
Module #4: Reading Textbooks							
Computer	33.8	40.8	25.4	0.0	0.0	1.98	>.70 <.50
Print	30.1	44.2	24.2	1.6	0.0		
Module #5: Taking Examinations							
Computer	36.6	46.5	14.1	2.8	0.0	5.61	>.20 <.10
Print	37.5	39.1	22.9	0.5	0.0		
Module #6: Writing Themes and Reports							
Computer	21.1	43.7	28.2	5.6	1.4	3.47	>.50 <.30
Print	14.7	47.6	34.6	3.1	0.0		
Module #7: Making Oral Reports							
Computer	22.5	50.7	26.8	0.0	0.0	11.35	>.01
Print	13.6	44.5	34.0	5.8	2.1		
Module #8: Improving Scholastic Motivation							
Computer	38.0	43.7	15.5	1.4	1.4	.38	>.95 <.90
Print	34.0	46.6	16.8	1.6	1.0		
Module #9: Improving Interpersonal Relations							
Computer	32.4	49.3	18.3	0.0	0.0	4.82	>.20 <.10
Print	28.3	43.4	25.1	3.1	0.0		
Module #10: Improving Concentration							
Computer	32.4	46.5	19.7	1.4	0.0	1.39	>.80 <.70
Print	25.6	49.7	22.0	2.6	0.0		

assessment of the course's value and helpfulness. Both approaches were evaluated very positively by the students completing C&I 1201, with an average of only 2.3% "very poor" or "poor" helpfulness ratings being given to the ten modules. Therefore, it was concluded that the two approaches may be expected to produce student evaluations that reflect comparable acceptance of course content.

RECOMMENDATIONS

The results of this study provide meaningful support for the conclusion that computer-based learning is likely to be as effective and as accepted as the traditional approach using printed materials to support instruction. However, the research findings do not support the proclaimed superiority of the evolving computer-based learning methodology. Before investing additional time and money in implementing computer-based learning, it would appear appropriate to pause and do the needed research to obtain definitive answers to questions about the effectiveness of computer-based learning for a wide range of learners and learning tasks.

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